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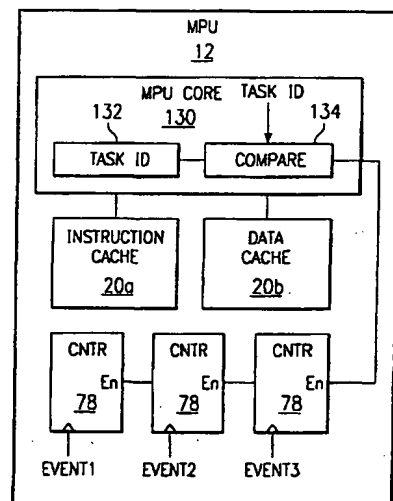
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(54) **Task based adaptive profiling and debugging**

(57) A multiprocessor system (10) includes a plurality of processing modules, such as MPUs (12), DSPs (14), and coprocessors/DMA channels (16). Power management software (38) in conjunction with profiles (36) for the various processing modules and the tasks to be executed are used to build scenarios which meet predetermined power objectives, such as providing maximum operation within package thermal constraints or using minimum energy. Actual activities associated with the tasks are monitored during operation to ensure compatibility with the objectives. The allocation of tasks may be changed dynamically to accommodate changes in environmental conditions and changes in the task list. Temperatures may be computed at various points in the multiprocessor system by monitoring activity information associated with various subsystems. The activity measurements may be used to compute a current power dissipation distribution over the die. If necessary, the tasks in a scenario may be adjusted to reduce power dissipation. Further, activity counters may be selectively enabled for specific tasks in order to obtain more accurate profile information.

FIG. 12





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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Y	US 5 339 445 A (GASZTONYI LASZLO R) 16 August 1994 (1994-08-16) * column 3, line 29 - column 4, line 9 * * column 4, line 27 - line 38 * * claims 1-5 *	1-4, 7-10,12, 13	G06F11/34 G06F9/46 G06F1/20
Y	US 5 944 841 A (CHRISTIE DAVID S) 31 August 1999 (1999-08-31) * column 11, line 62 - column 12, line 12 *	1-4, 7-10,12, 13	
A	SPINELLIS D: "TRACE: A TTOL FOR LOGGING OPERATING SYSTEM CALL TRANSACTIONS" OPERATING SYSTEMS REVIEW (SIGOPS), ACM HEADQUARTER. NEW YORK, US, vol. 28, no. 4, 1 October 1994 (1994-10-01), pages 56-63, XP000485478 * page 58, paragraph 2.2 - page 59 *	1,7,13	
A	F. BELLOSA: "OS-Directed Throttling of Processor Activity for Dynamic Power Management" TECHNICAL REPORT, 'Online! June 1999 (1999-06), pages 1-5, XP002250975 Retrieved from the Internet: <URL:http://www4.informatik.uni-erlangen.de/TR/pdf/TR-I4-99-03.pdf> 'retrieved on 2003-08-12! * page 4, left-hand column, line 31 - line 39 *	1,7,13	TECHNICAL FIELDS SEARCHED (Int.Cl.7) G06F
A	EP 0 794 481 A (MITSUBISHI ELECTRIC CORP) 10 September 1997 (1997-09-10) * page 2, line 1 - page 3, line 12 *	13	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 12 August 2003	Examiner Michel, T
CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons &: member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 00 40 2947

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12-08-2003

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5339445	A	16-08-1994	AU 5616594 A	08-06-1994
			CA 2149546 A1	26-05-1994
			DE 69327794 D1	09-03-2000
			DE 69327794 T2	31-08-2000
			EP 0669016 A1	30-08-1995
			JP 8503566 T	16-04-1996
			WO 9411801 A1	26-05-1994
US 5944841	A	31-08-1999	NONE	
EP 0794481	A	10-09-1997	CA 2199183 A1	06-09-1997
			CN 1159021 A	10-09-1997
			EP 0794481 A2	10-09-1997
			JP 9297688 A	18-11-1997

EPO FORM P459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82